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Subject: Contract No. 605  
Task Order No. 4  
Receiving Dish Antenna  
Instruction Books, Submission of

Enclosure: (A) Instruction Book for Receiving Dish  
Antenna, twenty (20) copies

Gentlemen:

Pursuant to the terms and provisions of the subject contract, the contractor submits Enclosure (A), described above, as fulfilling the requirements for instruction books set forth therein. Due to the fact the subject contract does not set forth an applicable shipping address for the instruction books, the books are being transmitted to your attention with the understanding that the books will be distributed to the applicable parties.

Very truly yours,

Contract Administrator  
NKG:js

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# **INSTRUCTION BOOK**

## **RECEIVING DISH ANTENNA**

**600 TO 6000 MC**

**523 0014 00**

**15 JUNE 1959**

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## **INSTRUCTION BOOK**

# **RECEIVING DISH ANTENNA**

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PRINTED IN THE UNITED STATES OF AMERICA

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### **1.1 GENERAL.**

The Receiving Dish Antenna shown in figures 1 and 2 is a lightweight, quickly erected, high gain antenna in the 600- to 6000-mc frequency range. It is directional and can be either vertically or horizontally polarized as desired.

The antenna structure consists of three main subassemblies.

- a. the base assembly, which consists of the portable folding base section and support mast;
- b. the dish assembly, consisting of a center dish section and eight dish support arms;
- c. and the feed support assembly, consisting of the four support legs, spider, and logarithmic periodic feed pyramid.

The electrical characteristics of the antenna are shown in the charts included. These show the beamwidth of the antenna as a function of frequency (figure 4), the gain in db over a reference dipole (figure 5), the vswr as a function of frequency (figure 6), and the radiation patterns of the antenna (figures 7, 8, and 9).

### **2.1 ASSEMBLY INSTRUCTIONS.**

Refer to figure 11, the assembly drawing of the antenna, and to figure 10, a simple exploded view of the antenna, as an aid to assembly.

- a. Unfold the base and tighten sockethead screws.
- b. Stack the four mast sections onto the base.
- c. Attach cable extension to the end of the cable assembly.
- d. Fasten the end plate, washer, and 1/2 x 13 hex nut to the cable extension.

Receiving Dish Antenna  
600 to 6000 Mc

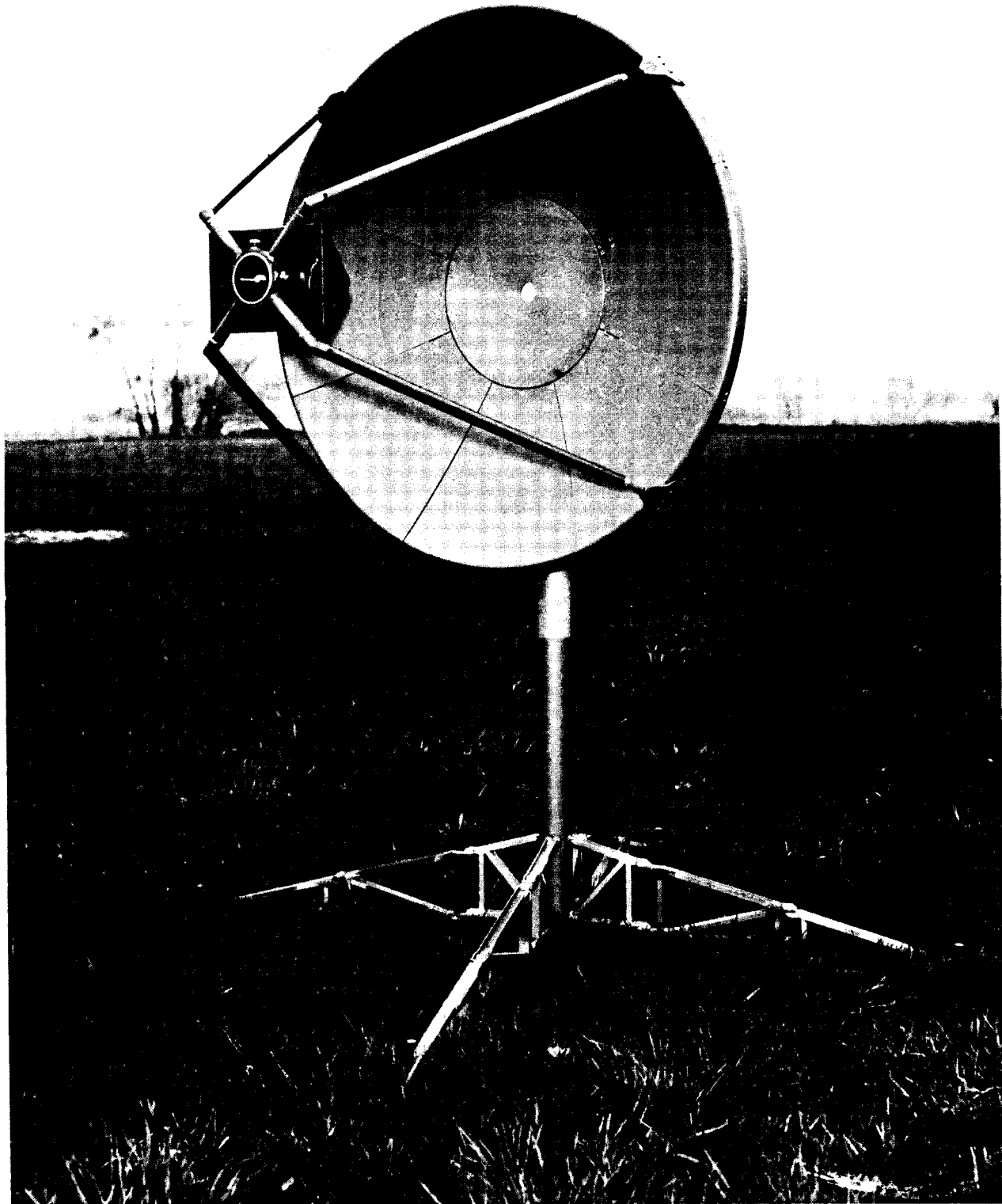


Figure 1. Receiving Dish Antenna, Front View

Receiving Dish Antenna  
600 to 6000 Mc

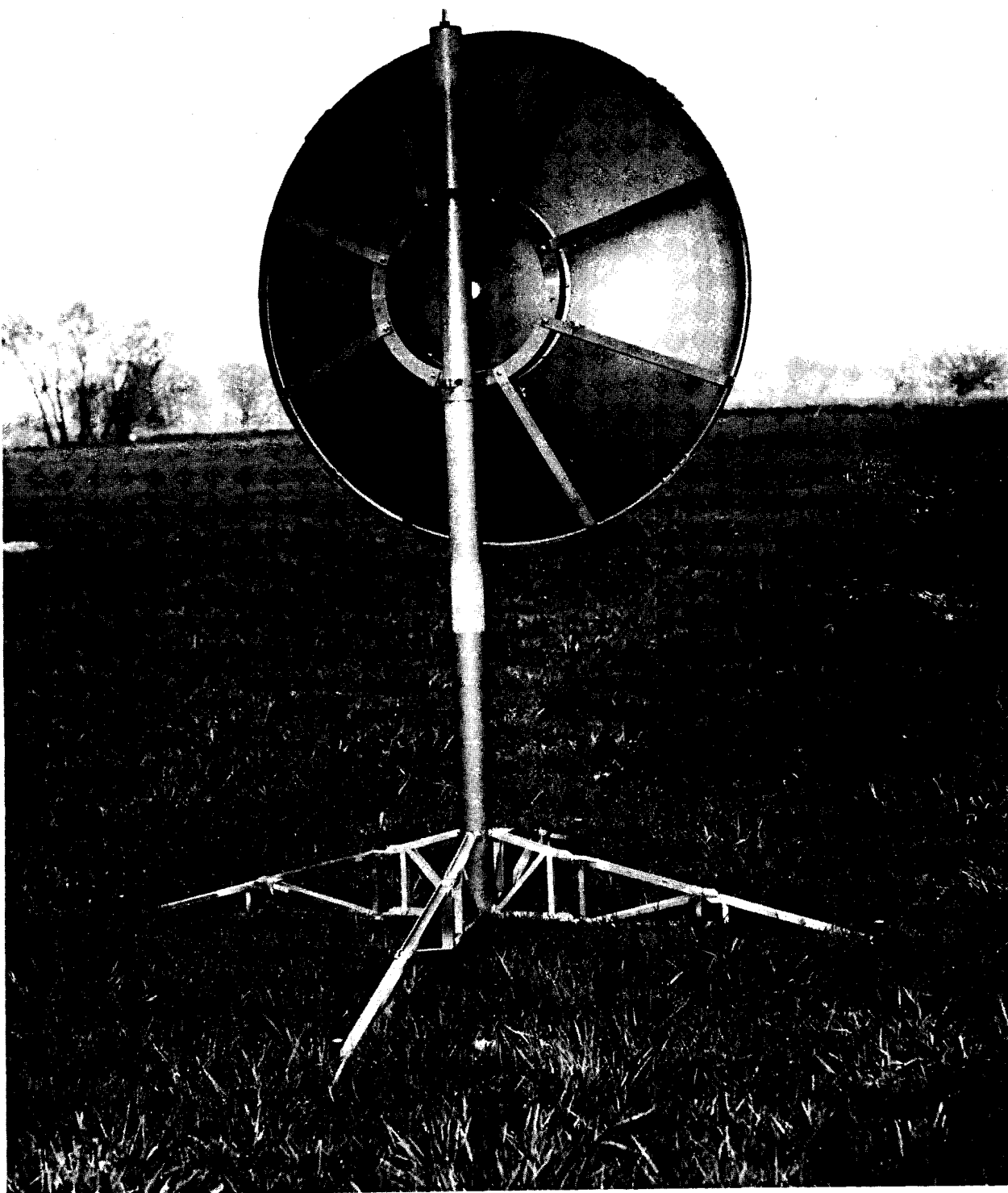


Figure 2. Receiving Dish Antenna, Rear View

Receiving Dish Antenna  
600 to 6000 Mc

- e. Thread the cable from top to bottom of the stacked mast sections.
- f. Attach cable pin to the bottom of the cable after cable is threaded down mast.
- g. Tighten hex nut on cable end plate until mast reaches desired tension.
- h. Attach engraved azimuth ring to mast.

## 2.2 DISH ASSEMBLY.

- a. Place spacer rod on flat surface with small end up.
- b. Turn center dish over spacer, concave side down.
- c. Attach the eight dish segments to the center dish section with 10-32 x 1/2 flat head screws and 10-32 captive nuts.
- d. Lay the mounting ring on the center dish section with the flat side up.
- e. Attach the eight dish support arms to the dish sections, using 10-32 x 1/2 flat head screws on the dish center, and 10-32 x 1/2 round head screws on the dish rim.
- f. Fasten the eight dish support arms to the center ring using 10-32 x 1/2 round head screws, washers, and 10-32 hex nuts.

## 2.3 FEED SUPPORT ASSEMBLY.

- a. Assemble spider and four feed support tubes.
- b. Mount the feed support assembly to the dish with support legs attached 45 degrees from center line of mast clamps. Use one 1/4 x 20 x 5/8 bolt per support leg at this time to attach support legs to dish rim.
- c. Mount the logarithmic periodic feed pyramid.

### CAUTION

Fiberglas case on feed pyramid is fragile; handle with care.

- d. Adjust the support legs as necessary to insure 22-13/16 inches spacing from the point of the feed pyramid to the center of the dish, keeping all legs equal length to insure proper alignment of the feed pyramid.
- e. Attach and tighten the remainder of the 1/4 x 20 x 5/8 bolts to the support legs and a 1/4-inch lock washer, and 1/4 x 20 hex nut.
- f. Secure the feed pyramid to the spider, noting the instructions stenciled on the feed. Turn either for vertical or horizontal polarization as desired.
- g. Slide the dish onto mast and tighten mast rings.
- h. Connect the right angle fitting of the short coaxial jumper to the pyramid feed point.
- i. Connect the 30-ft piece of semiflexible coaxial feed line to the other end of the short coaxial jumper and clip the semiflexible feed line to a lower support leg with two clamps.

### CAUTION

Do not kink or sharply bend the semiflexible coaxial line. Be extremely careful in shaping this line to avoid damage. Minimum bend radius is six inches.

## 3.1 MAINTENANCE AND PACKING.

Since aluminum is the basic structural material, the antenna needs no routine maintenance beyond normal concern for wear of parts; however, care should be exercised in handling.

The antenna can be transported in three metal boxes which are packed as shown in figure 3.

NUMBER	BOX	MFR'S SKETCH NO.
	Box 1	
1	Mounting ring assy.	no number
1	Spacer rod	4046 B 208
4	Mast sections	4046 B 120
8	Dish support arms	4046 B 102
1	Center dish	4046 E 198
8	Dish segments	4046 E 196
	Box 2	
1	Base assembly	no number
1	Index ring	no number
1	Mast cable assy.	4046 B 125
1	Cable pin	4046 B 126
1	End plate	4046 B 123
1	Cable extension	4046 B 124
1	Nut, 1/2-13	313 1028 00
1	1/2 in flat washer	310 0485 00
1	Tool kit	4046 A 212
	Box 3	
1	Cable Assy.	4046 A 209
1	Coaxial line spool	4020 A 92
1	Coaxial line jumper assy.	4046 A 207
2	Coaxial line clamps	4046 B 211
1	Logarithmic periodic feed pyramid	4020 D 352
1	Spider	4046 A 200
1	Nut, 5/16 - 18	313 0033 00
8	Feed leg	4046 B 186
4	Feed support base	4046 C 176
4	Nut, 1/2 - 13	313 1028 00
4	Washer 1/2 flat.	no number
1	Packaged hardware	no number

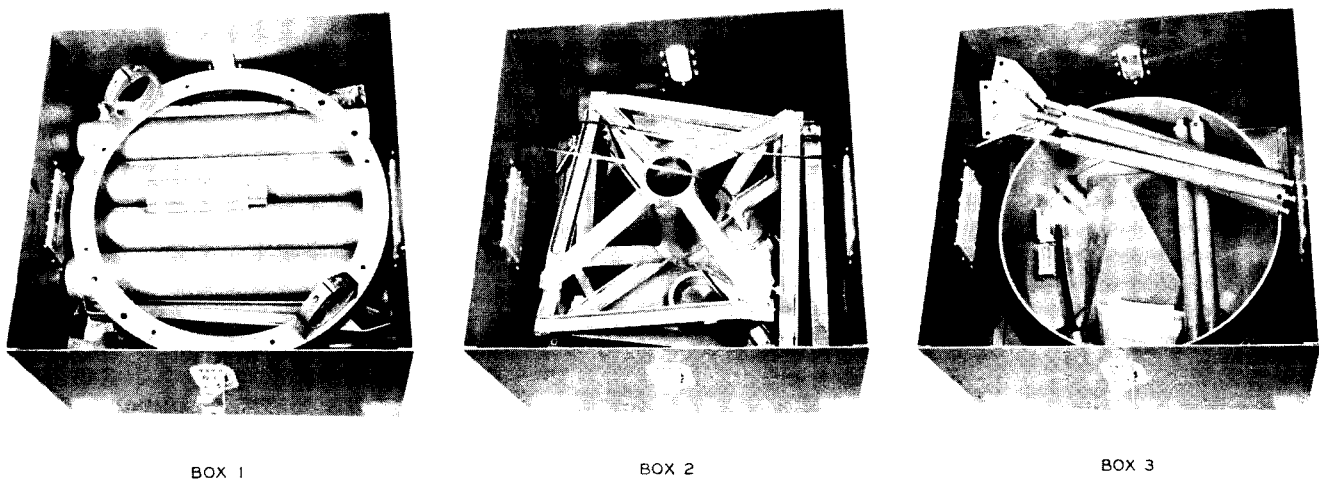


Figure 3. Antenna Packed in Transportable Metal Boxes

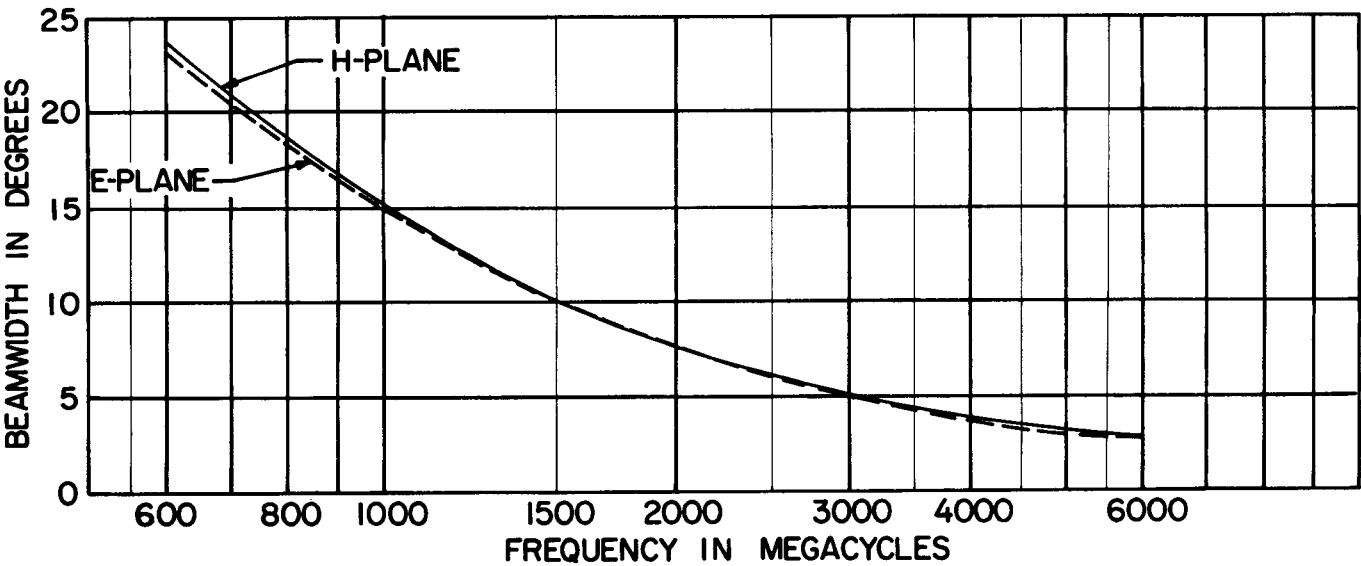


Figure 4. Beamwidth of Antenna as a Function of Frequency



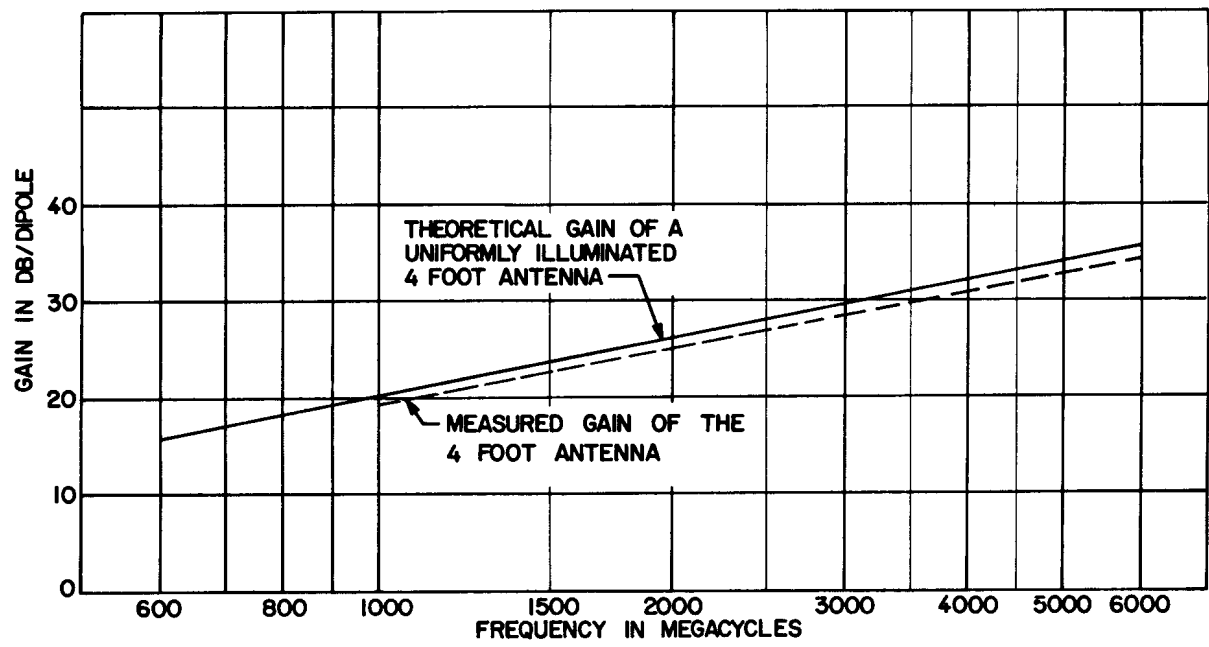


Figure 5. Gain in Db over a Dipole as a Function of Frequency

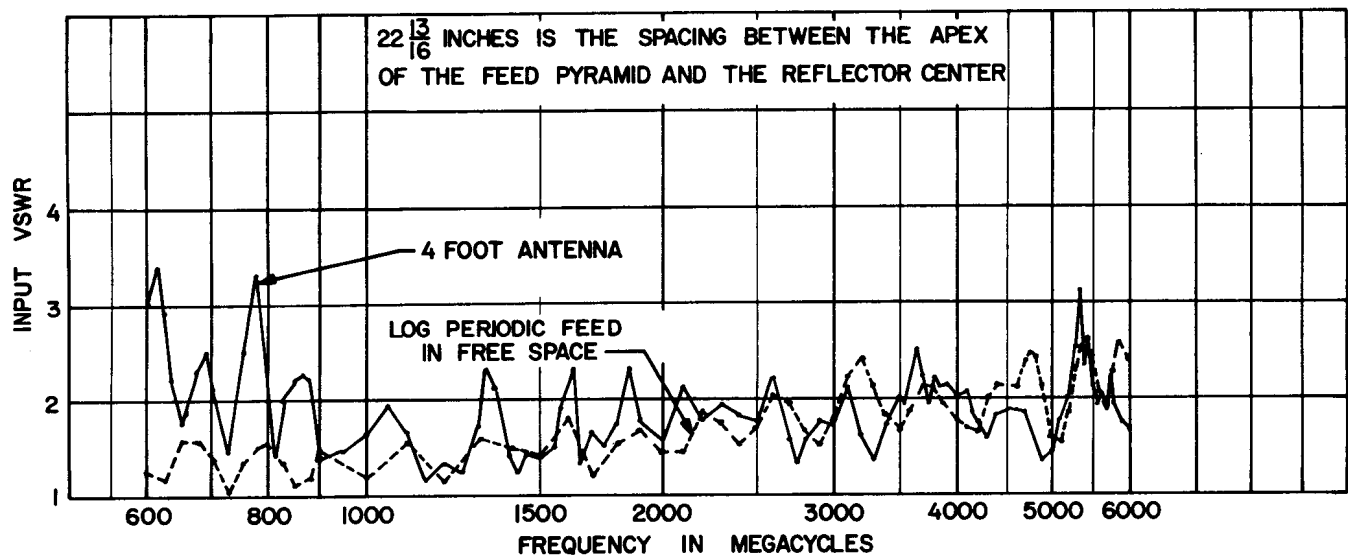
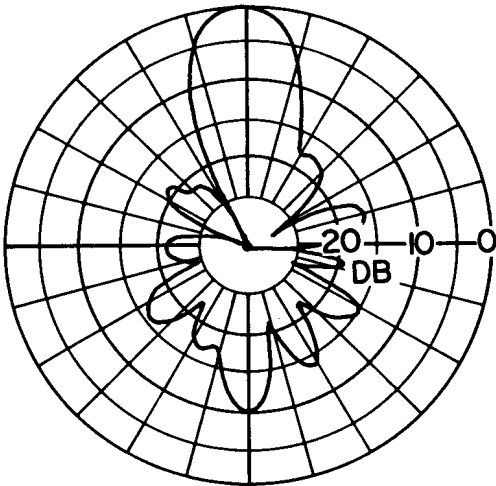
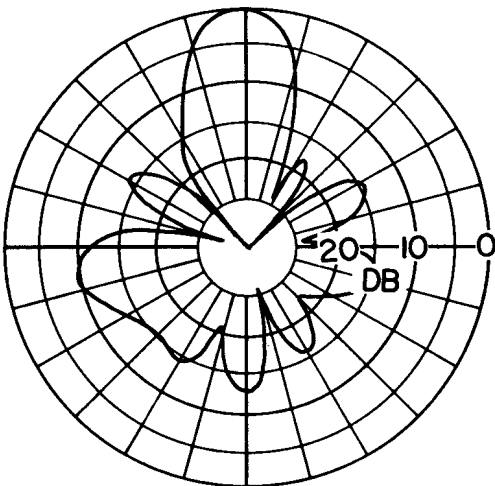


Figure 6. Vswr as a Function of Frequency

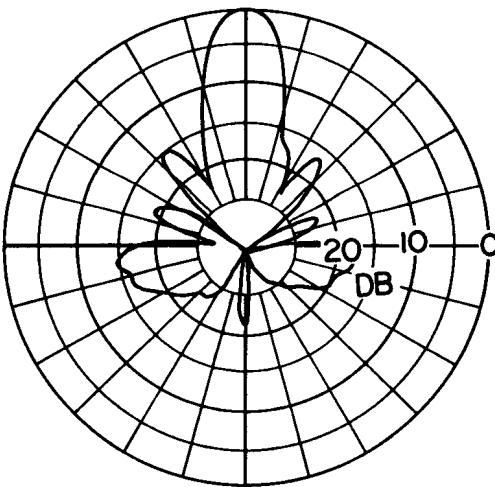
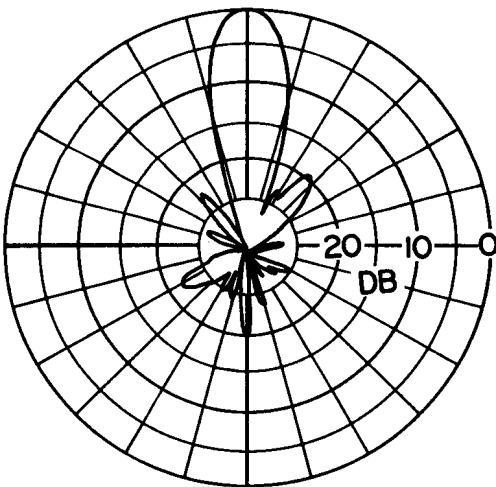
E - PLANE



H - PLANE



F = 600

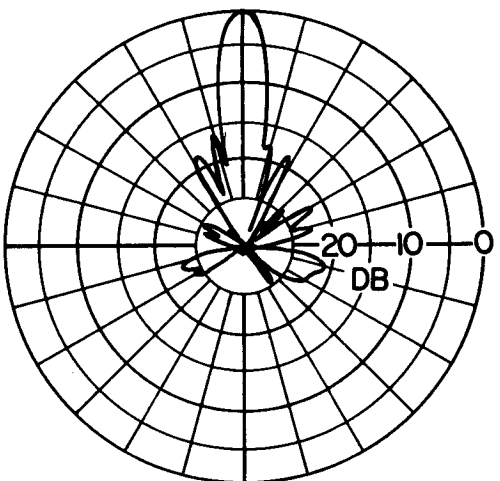
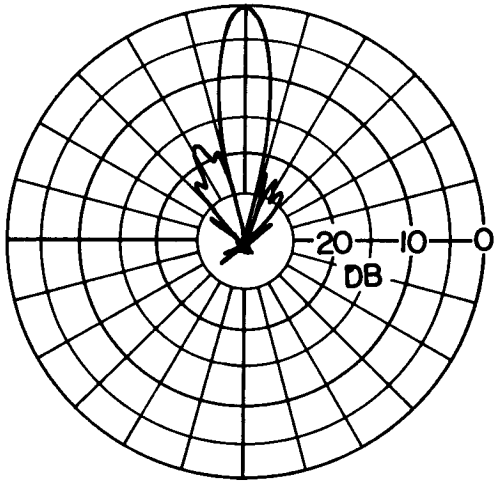


F = 950

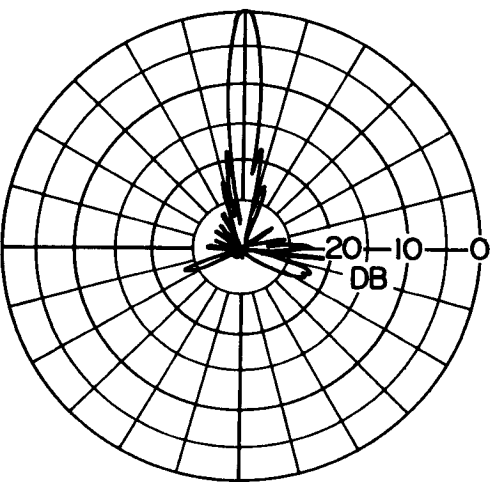
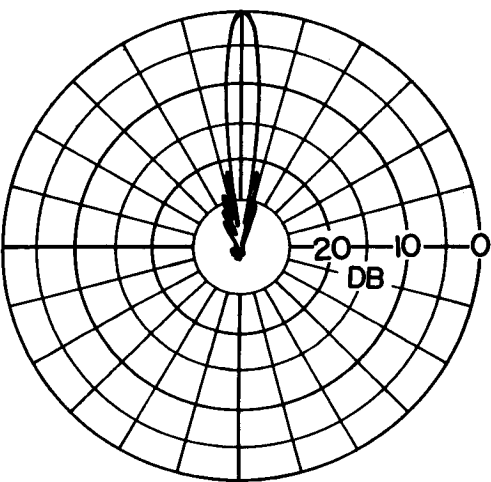
Figure 7. Radiation Patterns, 600 and 950 Mc

E - PLANE

H - PLANE



F = 1500



F = 2400

Figure 8. Radiation Patterns, 1500 and 2400 Mc

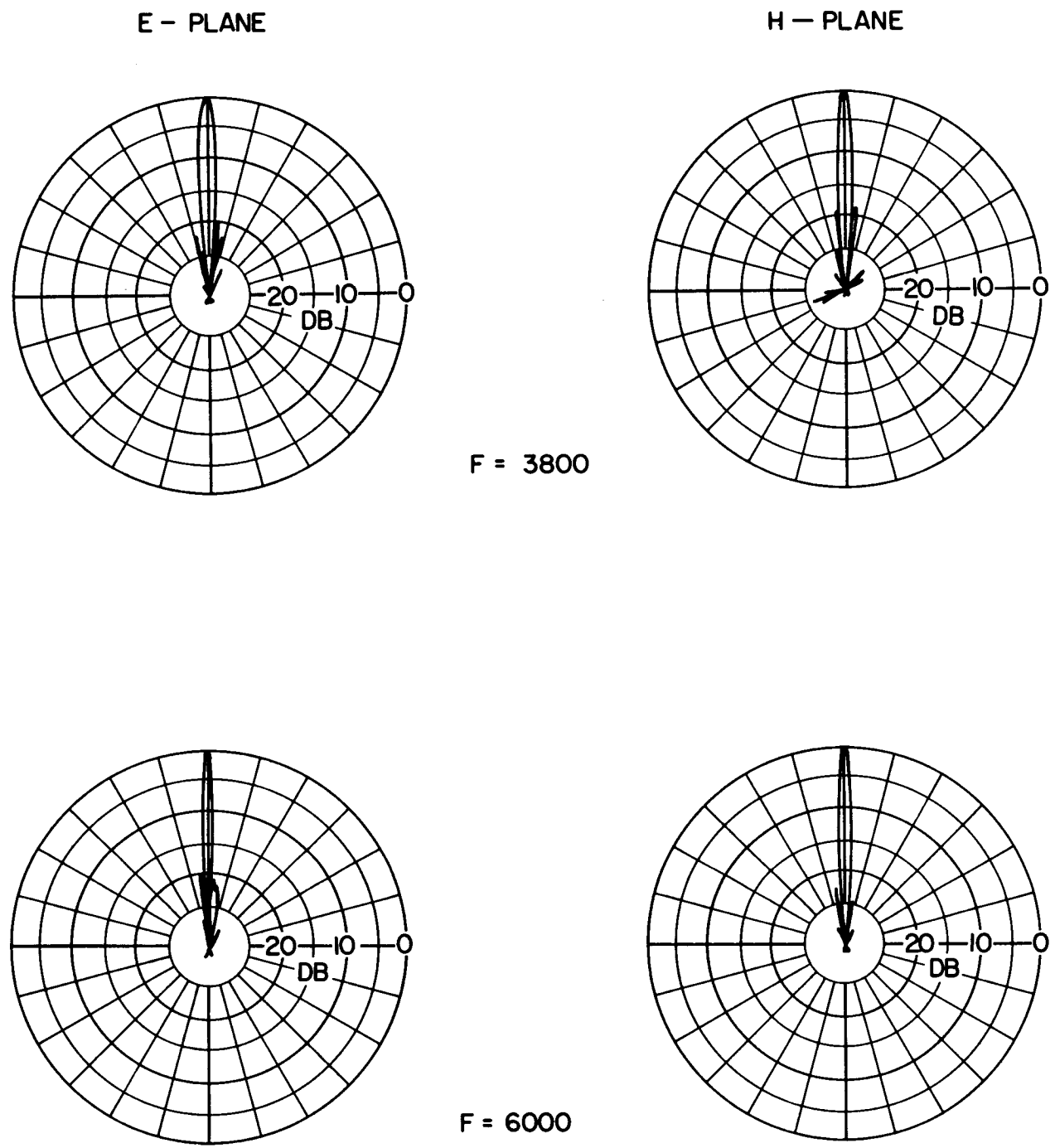


Figure 9. Radiation Patterns, 3800 and 6000 Mc

Receiving Dish Antenna  
600 to 6000 Mc

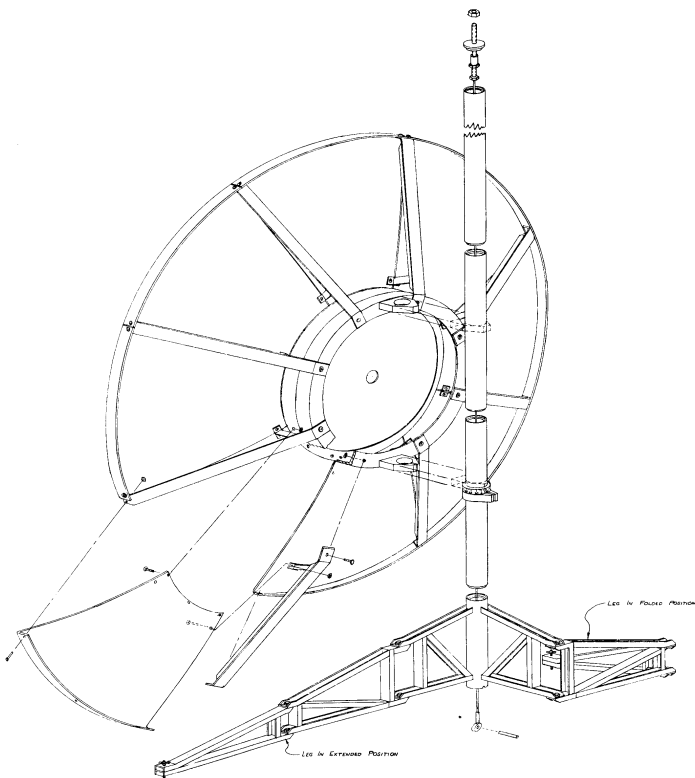
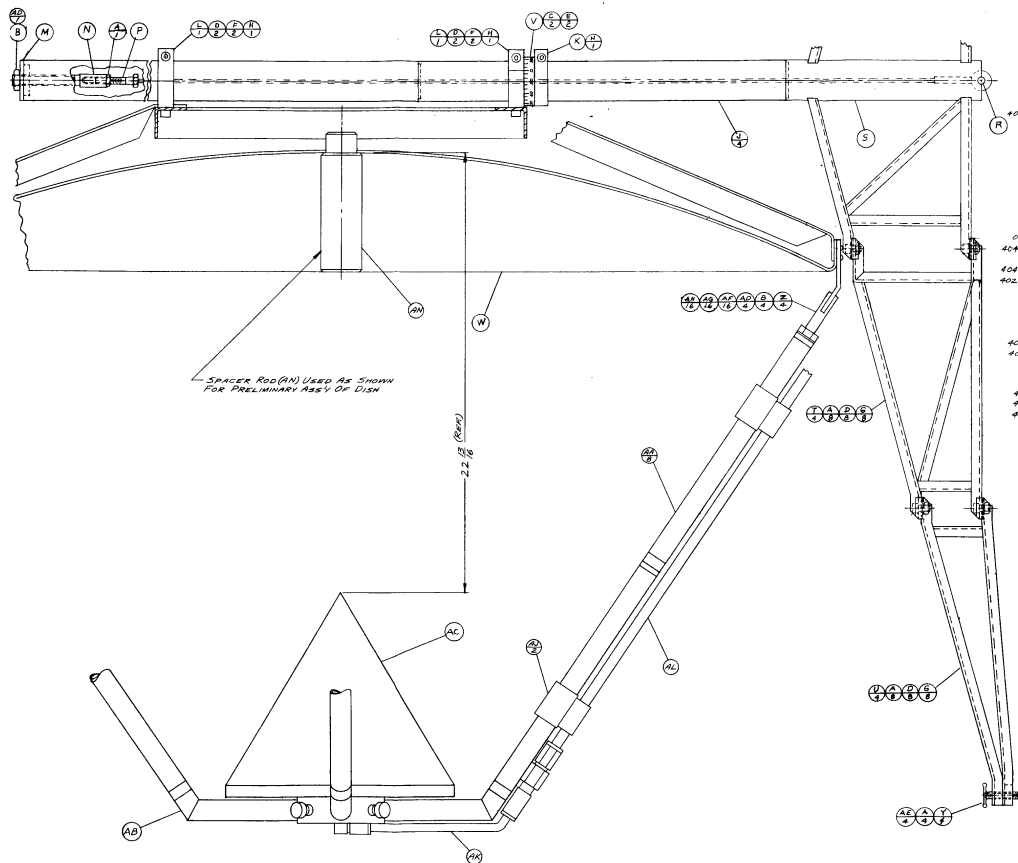


Figure 10. Exploded View

Receiving Dish Antenna  
600 to 6000 Mc

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ITEM	QUANTITY	DESCRIPTION	UNIT	REMARKS
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Figure 11. Assembly Drawing

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